FIG. 1 (PRIOR ART)

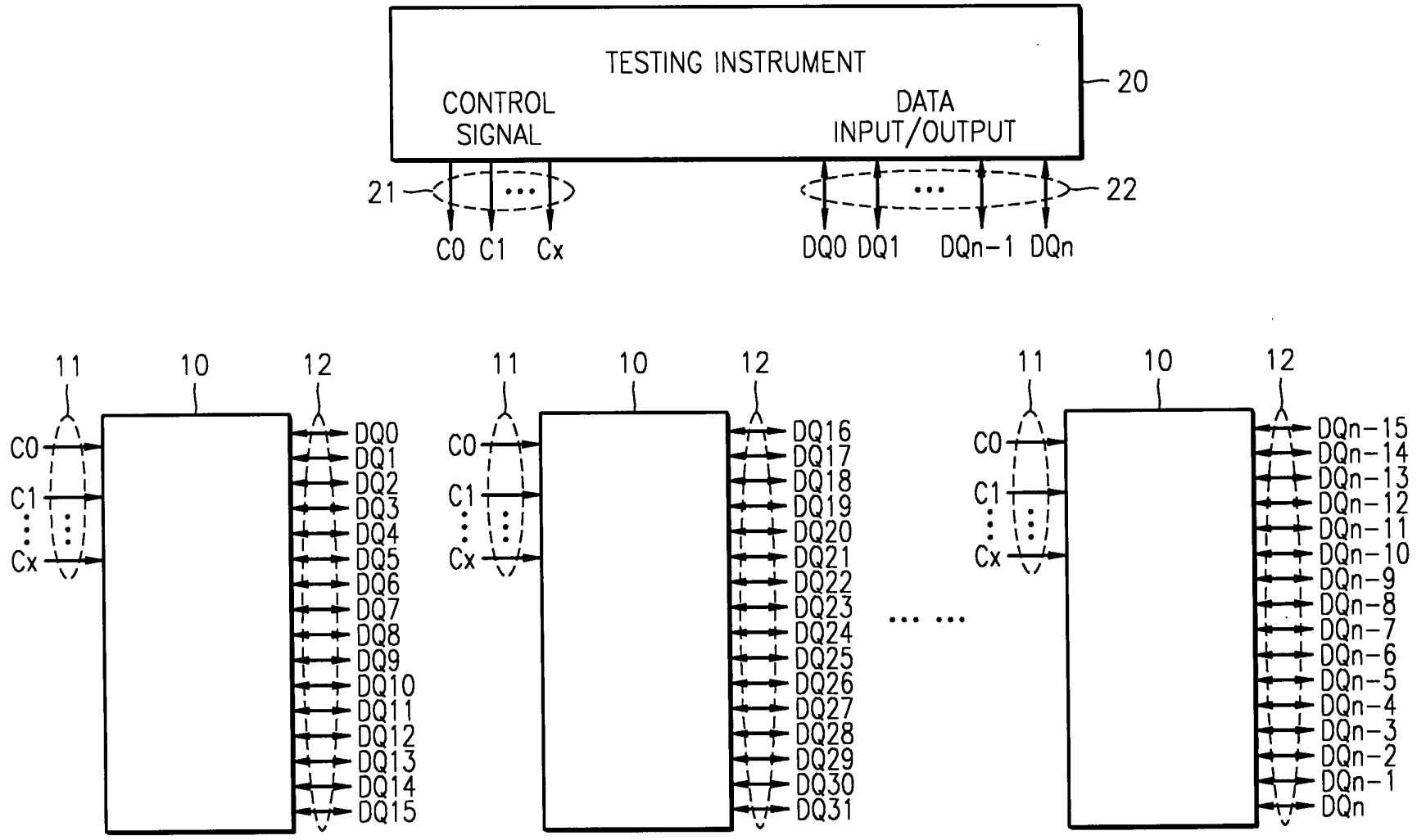


FIG. 2 (PRIOR ART)

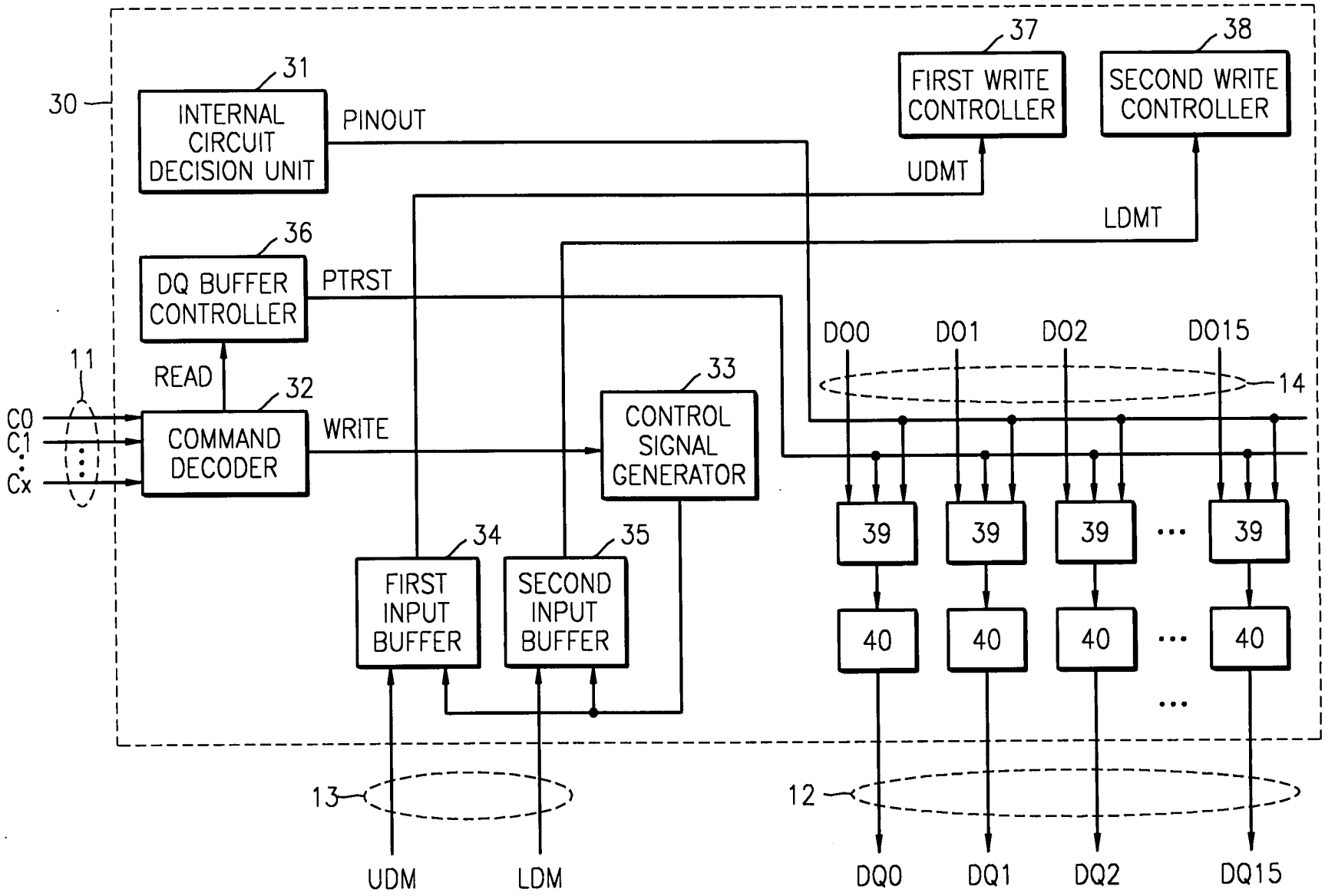
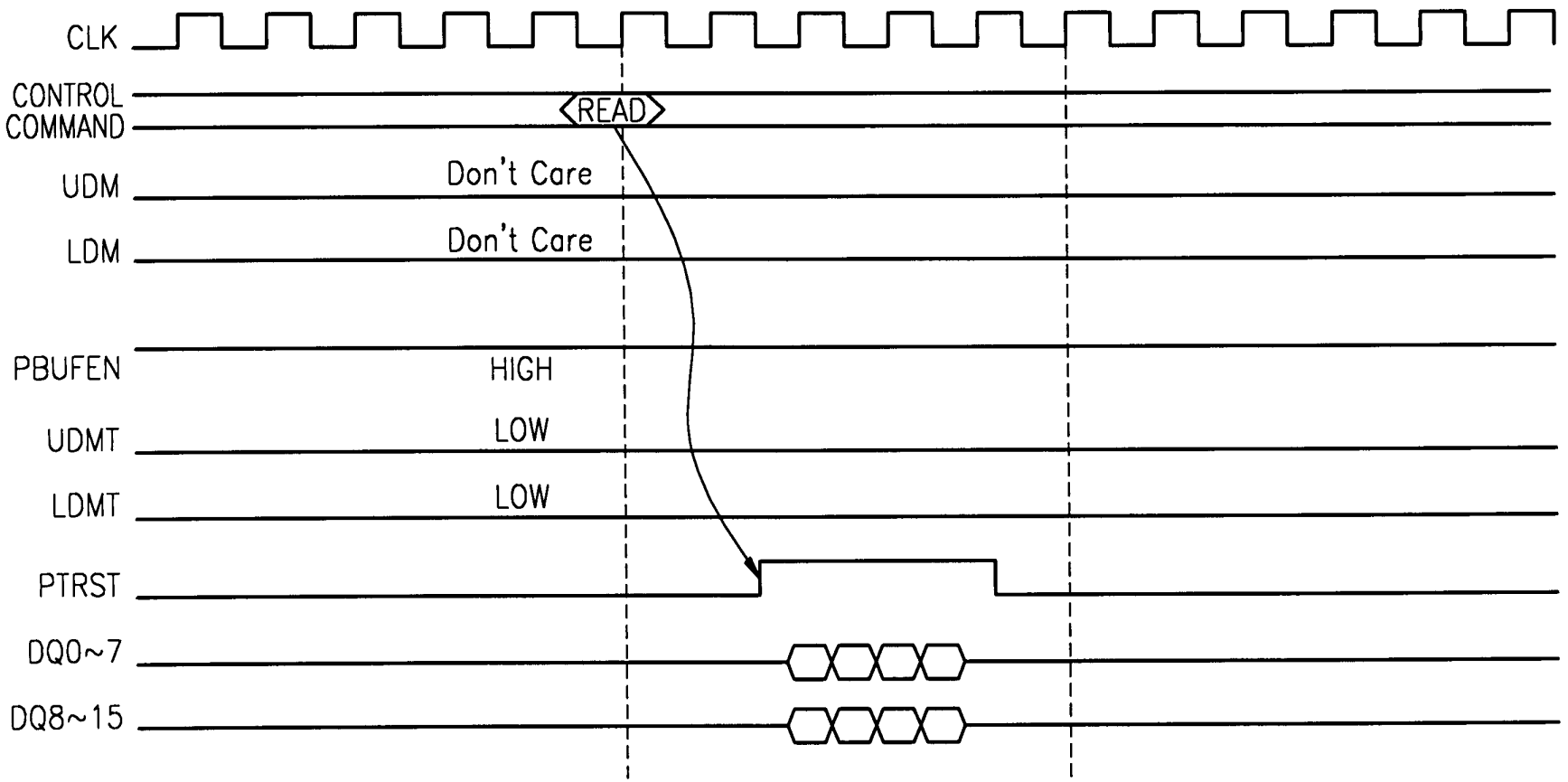


FIG. 3 (PRIOR ART)



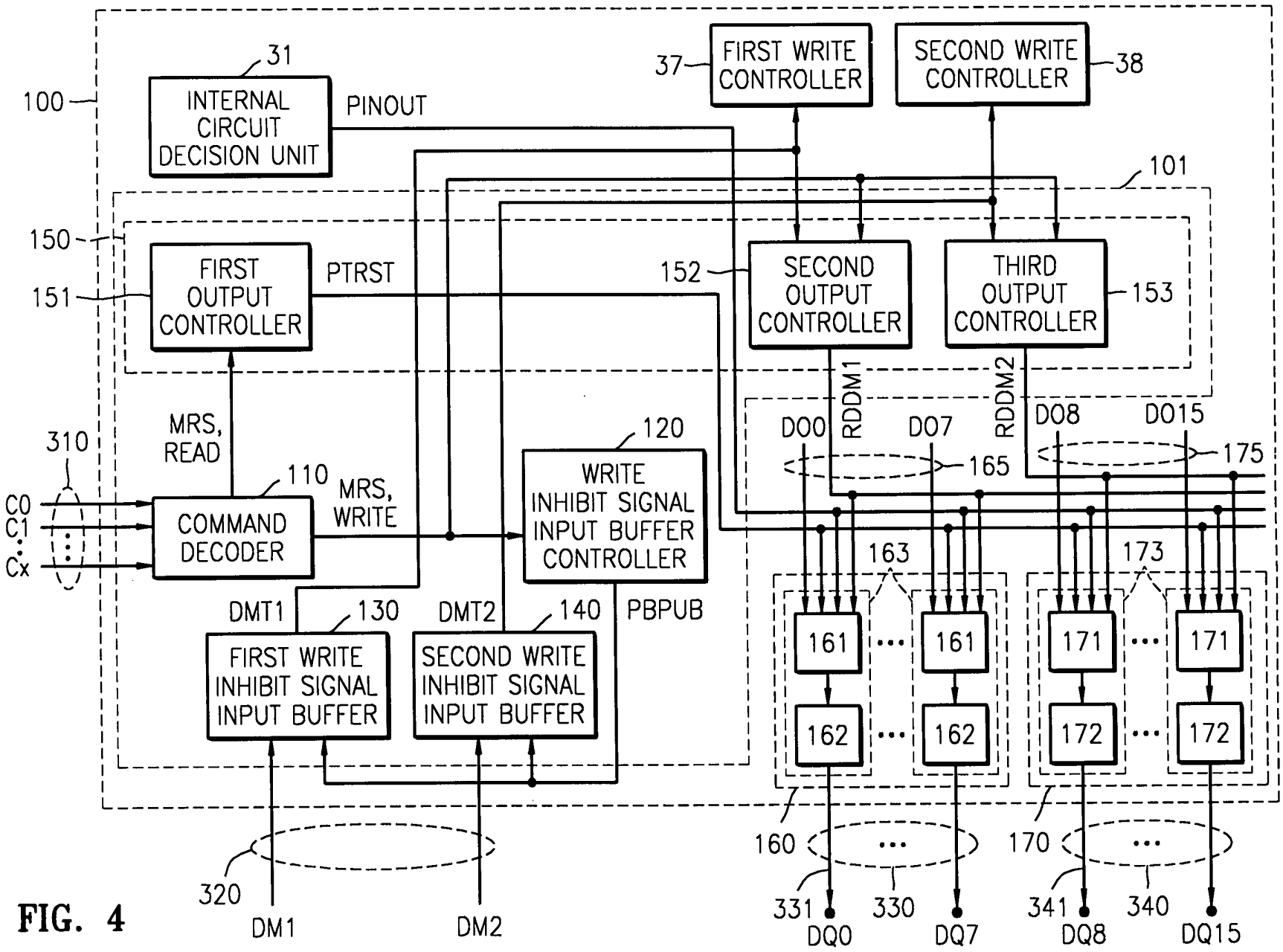

100
31
INTERNAL CIRCUIT DECISION UNIT
PINOUT
37
FIRST WRITE CONTROLLER
SECOND WRITE CONTROLLER
38
101
150
151
FIRST OUTPUT CONTROLLER
PTRST
152
SECOND OUTPUT CONTROLLER
THIRD OUTPUT CONTROLLER
153
RDDM1
RDDM2
DO0
DO7
DO8
DO15
165
175
310
C0
C1
Cx
MRS, READ
110
COMMAND DECODER
MRS, WRITE
120
WRITE INHIBIT SIGNAL INPUT BUFFER CONTROLLER
163
173
161
162
171
172
DMT1
130
FIRST WRITE INHIBIT SIGNAL INPUT BUFFER
DMT2
140
SECOND WRITE INHIBIT SIGNAL INPUT BUFFER
PBPUB
160
170
320
DM1
DM2
331
330
341
340
DQ0
DQ7
DQ8
DQ15

FIG. 4

FIG. 5

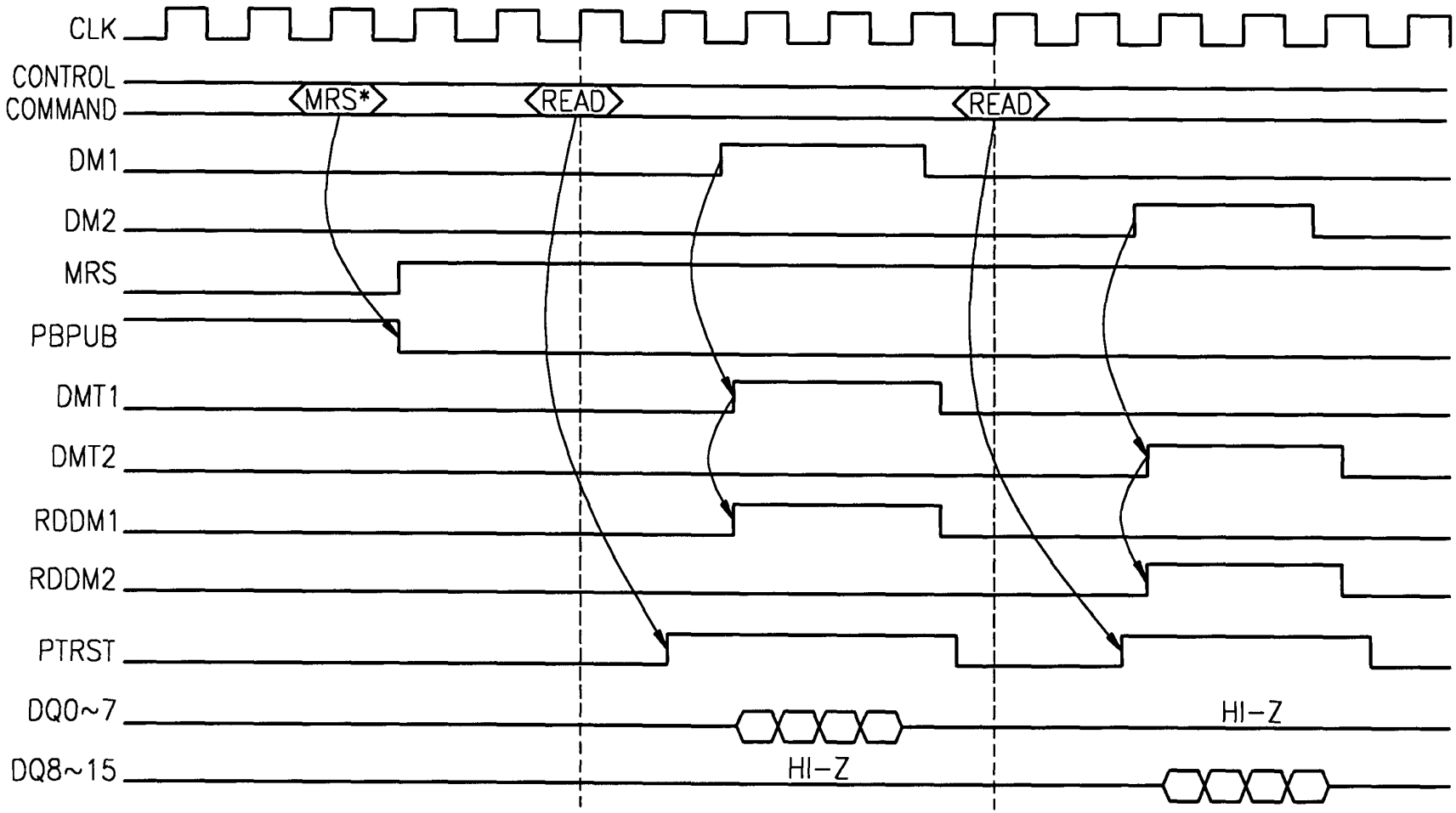

CLK
CONTROL COMMAND
MRS*
READ
READ
DM1
DM2
MRS
PBPUB
DMT1
DMT2
RDDM1
RDDM2
PTRST
DQ0~7
HI-Z
DQ8~15
HI-Z

FIG. 6

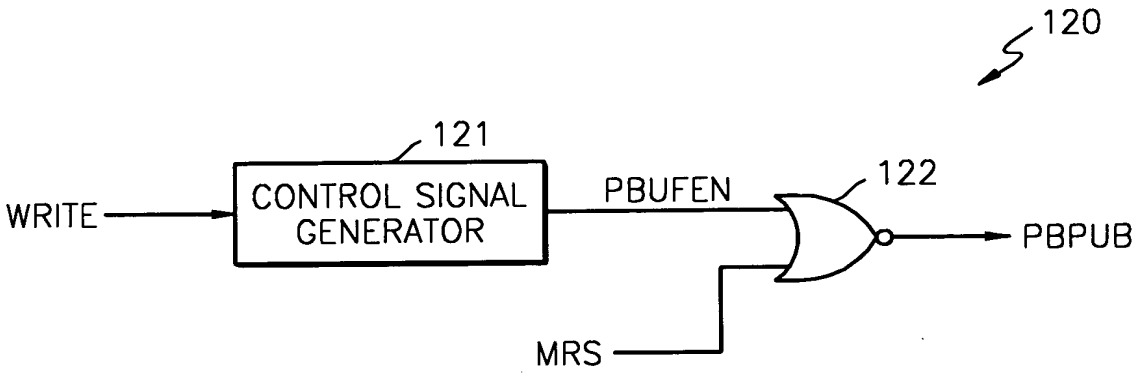

120
121
CONTROL SIGNAL GENERATOR
WRITE
PBUFEN
122
PBPUB
MRS

FIG. 7

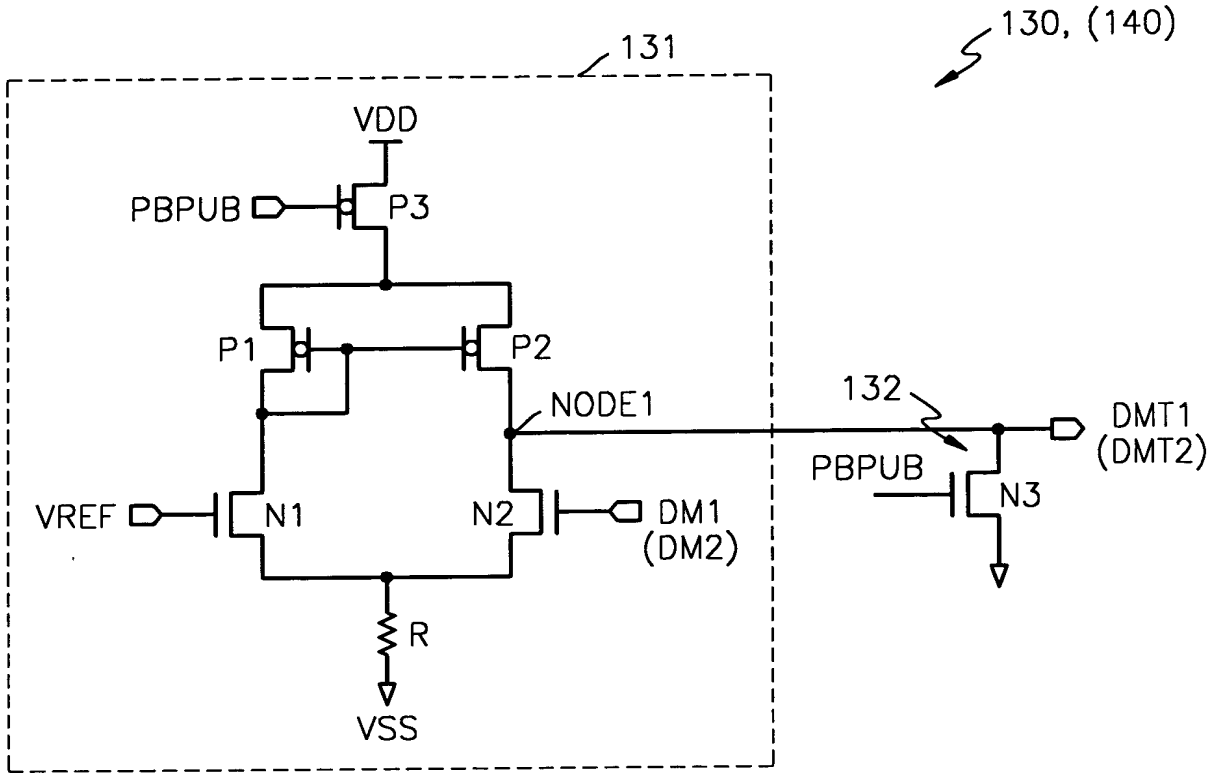

130, (140)
131
VDD
PBPUB
P3
P1
P2
NODE1
132
DMT1
(DMT2)
PBPUB
N3
VREF
N1
N2
DM1
(DM2)
R
VSS

FIG. 8

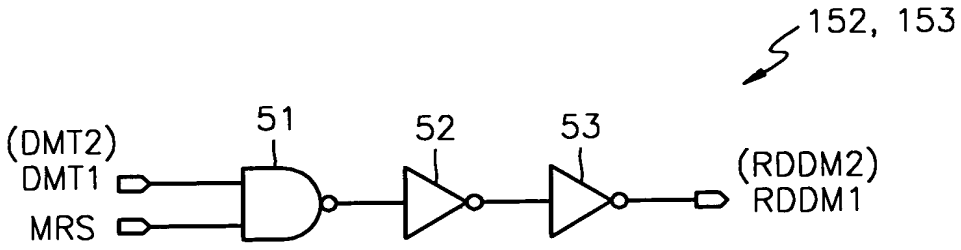


FIG. 9

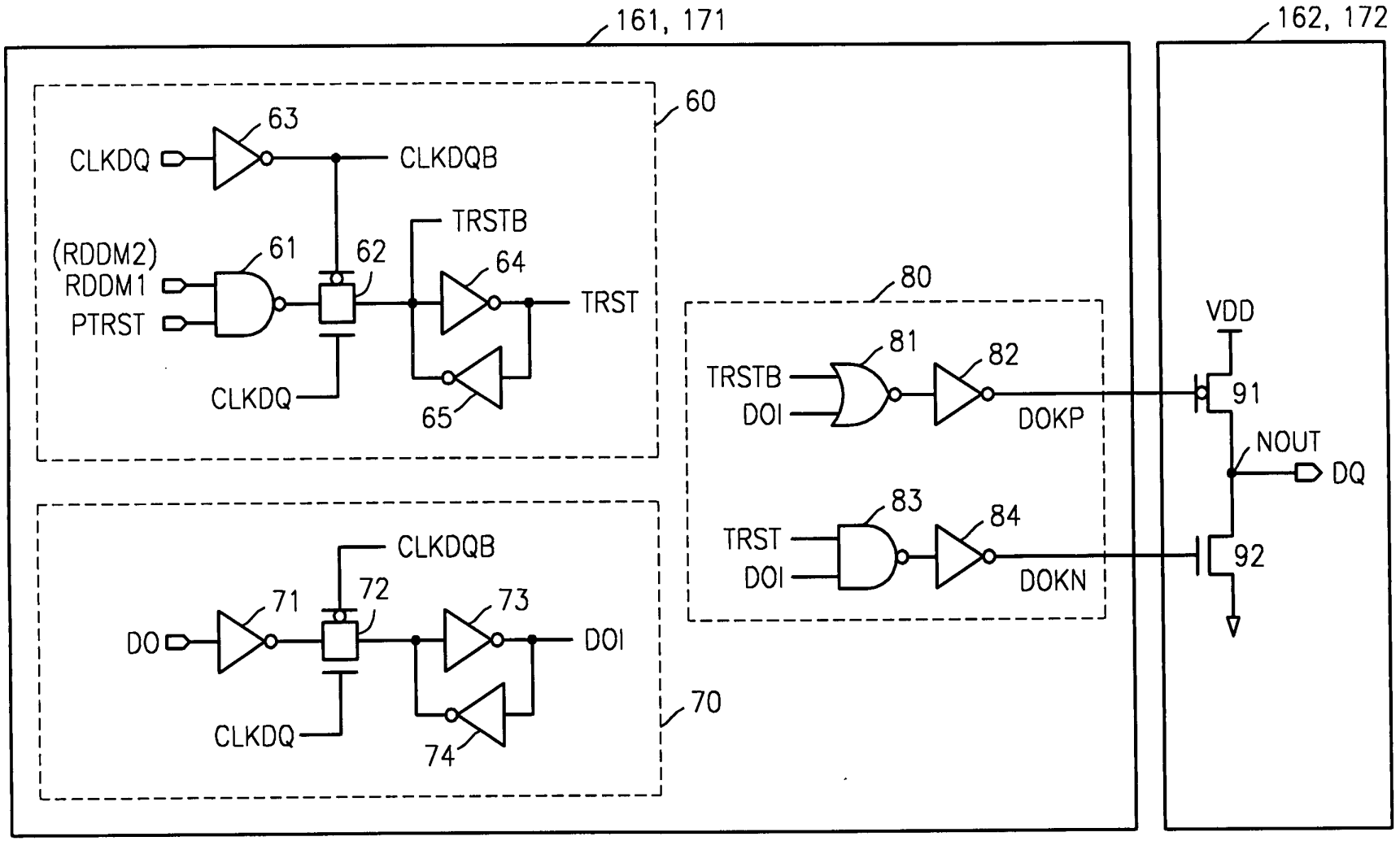

161, 171
162, 172
60
63
CLKDQ
CLKDQB
TRSTB
(RDDM2)
RDDM1
PTRST
61
62
64
TRST
CLKDQ
65
80
81
82
TRSTB
DOI
DOKP
VDD
91
NOUT
DQ
83
84
TRST
DOI
DOKN
92
CLKDQB
71
72
73
DO
DOI
CLKDQ
74
70

FIG. 10

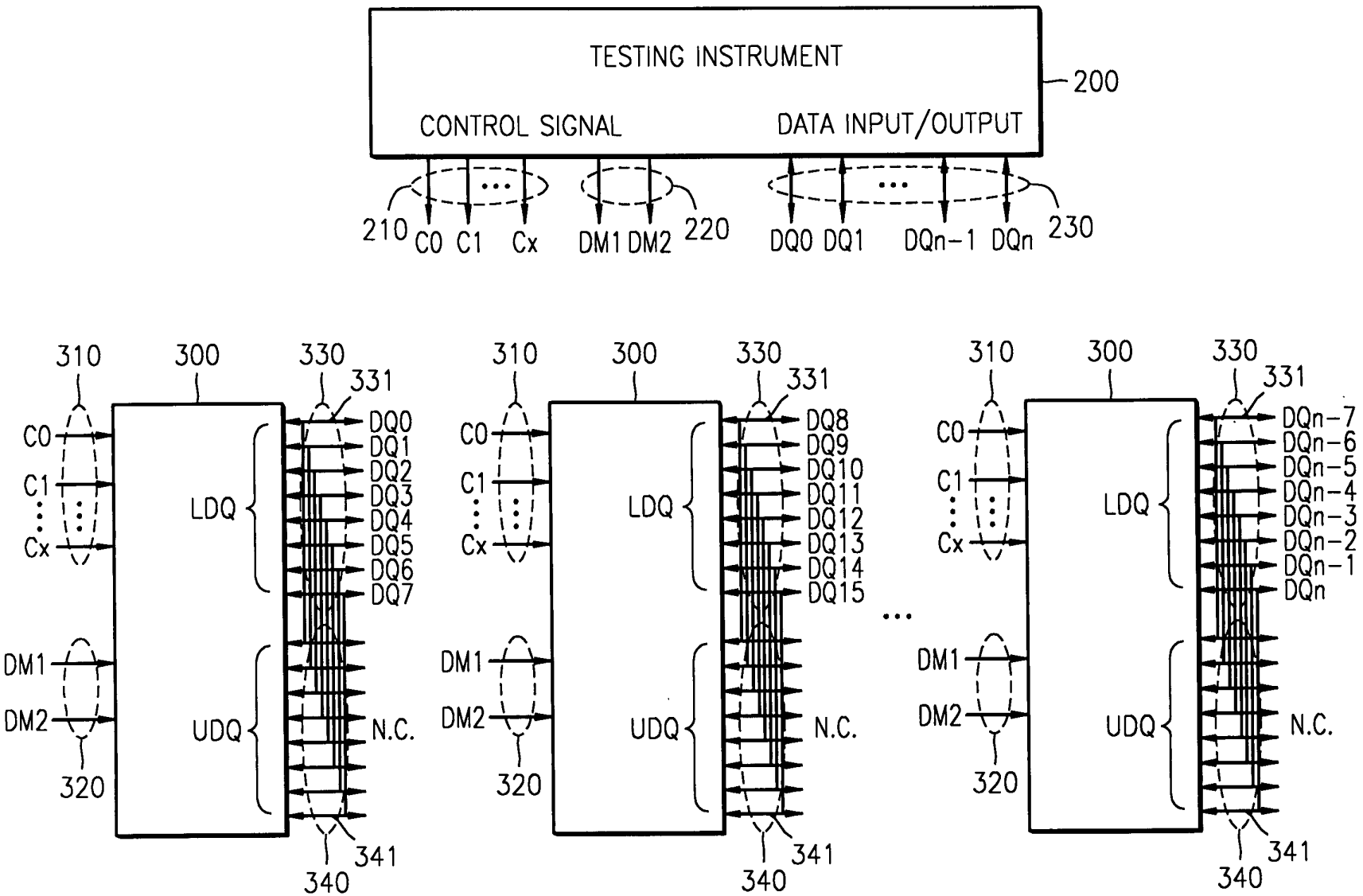

TESTING INSTRUMENT
200
CONTROL SIGNAL
DATA INPUT/OUTPUT
210
C0 C1 Cx
DM1 DM2
220
DQ0 DQ1
DQn-1 DQn
230
310
300
330
331
C0
C1
Cx
LDQ
DQ0
DQ1
DQ2
DQ3
DQ4
DQ5
DQ6
DQ7
DM1
DM2
UDQ
N.C.
320
340
341
DQ8
DQ9
DQ10
DQ11
DQ12
DQ13
DQ14
DQ15
DQn-7
DQn-6
DQn-5
DQn-4
DQn-3
DQn-2
DQn-1
DQn

FIG. 11

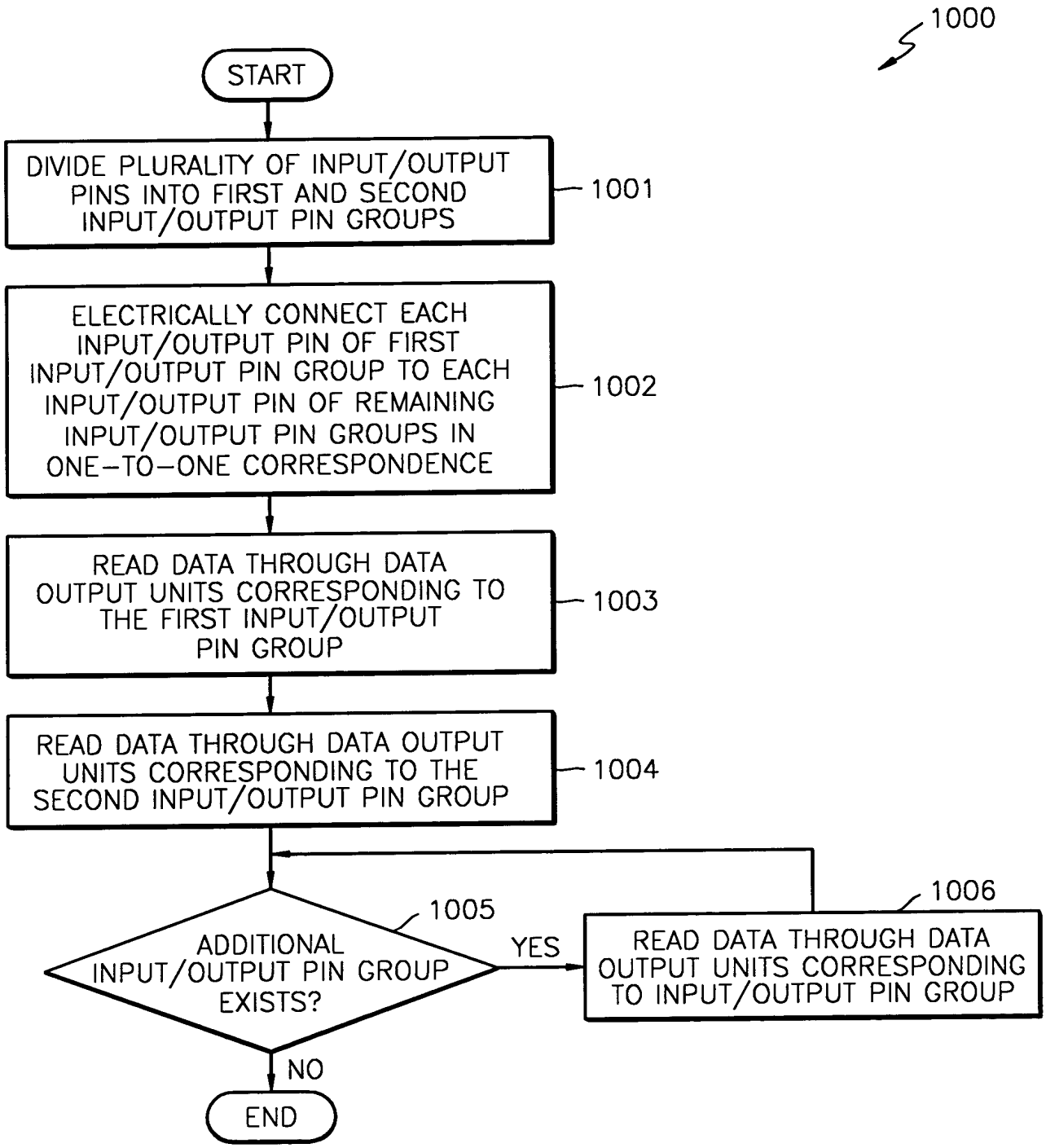
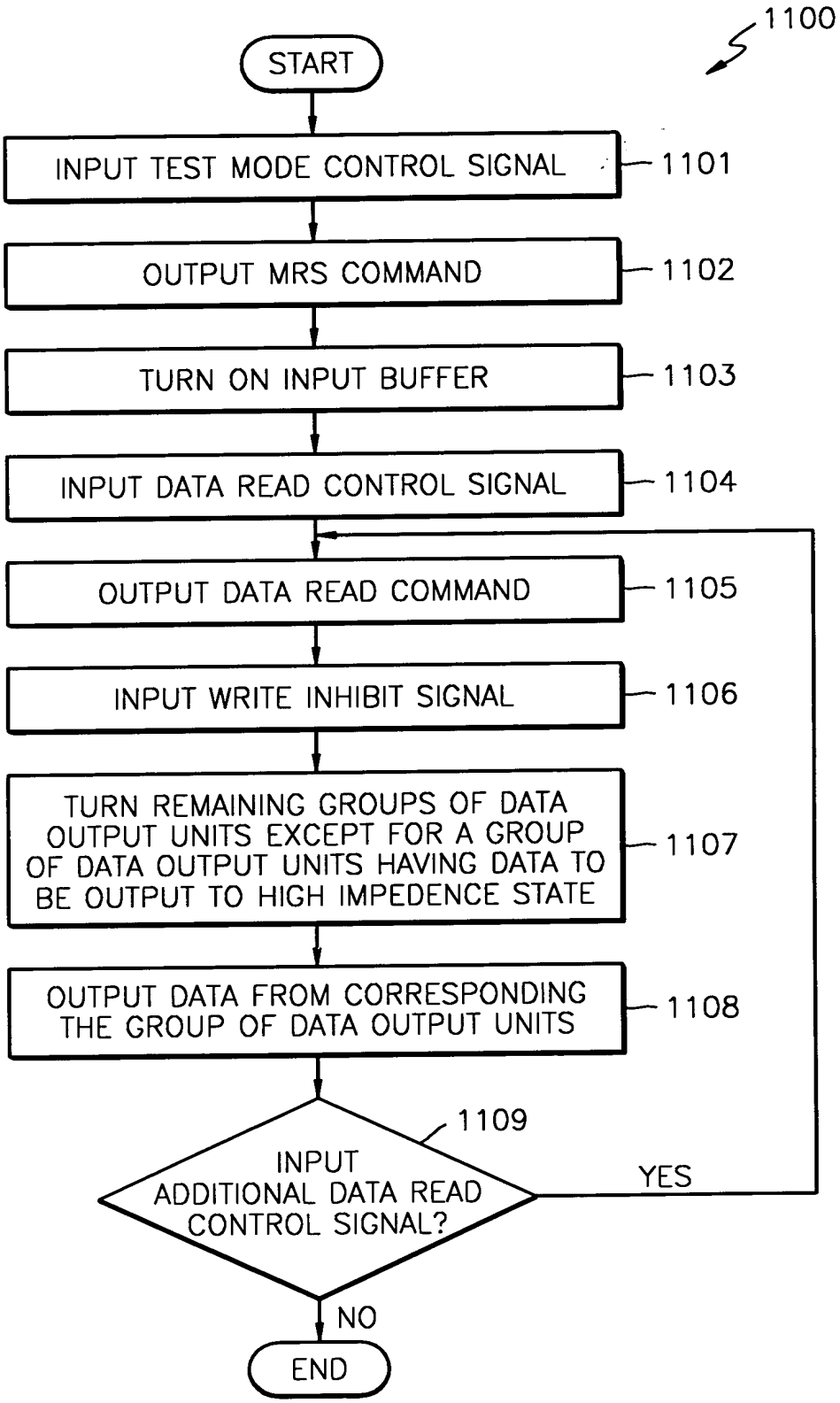

1000
START
DIVIDE PLURALITY OF INPUT/OUTPUT PINS INTO FIRST AND SECOND INPUT/OUTPUT PIN GROUPS
1001
ELECTRICALLY CONNECT EACH INPUT/OUTPUT PIN OF FIRST INPUT/OUTPUT PIN GROUP TO EACH INPUT/OUTPUT PIN OF REMAINING INPUT/OUTPUT PIN GROUPS IN ONE-TO-ONE CORRESPONDENCE
1002
READ DATA THROUGH DATA OUTPUT UNITS CORRESPONDING TO THE FIRST INPUT/OUTPUT PIN GROUP
1003
READ DATA THROUGH DATA OUTPUT UNITS CORRESPONDING TO THE SECOND INPUT/OUTPUT PIN GROUP
1004
ADDITIONAL INPUT/OUTPUT PIN GROUP EXISTS?
1005
YES
READ DATA THROUGH DATA OUTPUT UNITS CORRESPONDING TO INPUT/OUTPUT PIN GROUP
1006
NO
END

FIG. 12


1100
START
INPUT TEST MODE CONTROL SIGNAL
1101
OUTPUT MRS COMMAND
1102
TURN ON INPUT BUFFER
1103
INPUT DATA READ CONTROL SIGNAL
1104
OUTPUT DATA READ COMMAND
1105
INPUT WRITE INHIBIT SIGNAL
1106
TURN REMAINING GROUPS OF DATA OUTPUT UNITS EXCEPT FOR A GROUP OF DATA OUTPUT UNITS HAVING DATA TO BE OUTPUT TO HIGH IMPEDENCE STATE
1107
OUTPUT DATA FROM CORRESPONDING THE GROUP OF DATA OUTPUT UNITS
1108
1109
INPUT ADDITIONAL DATA READ CONTROL SIGNAL?
YES
NO
END